NO FURTHER ACTION DETERMINATION

The U. S. Department of Energy, U. S. Environmental Protection Agency-Region 10 and the State of Idaho have completed a review of the referenced information for Central Facilities Area (CFA)-30 hazardous site, as it pertains to the INEL Federal Facility Agreement of December 4, 1991. Based on this review, the parties have determined that no further action for purposes of investigation or study is justified. This decision is subject to review at the time of issuance of the Record of Decision.

Brief Summary of the basis for no further action:

See Decision Statement

References:

Initial Assessment
Summary Assessment
Track 1 pkg.

DOE Project Manager Lisa Green for JLL 1/6/93 Date

EPA Project Manager Wayne Pierre 1/6/93 Date

Idaho Project Manager [signature] 1/6/93 Date

Signature Copy

DECISION DOCUMENTATION PACKAGE COVER SHEET

PREPARED IN ACCORDANCE WITH

TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY SITES
AT INEL

SITE DESCRIPTION: Tank located roughly 10 ft NW of CFA-665
SITE ID: CFA-30 **OPERABLE UNIT:** 4-03
WASTE AREA GROUP: 4

I. SUMMARY - PHYSICAL DESCRIPTION OF THE SITE:

CFA-30 is the historical site of a 1000 gallon underground storage tank designated "tank #744." Tank #744 was used for bulk storage of waste oil from CFA-665, the site service station which maintains INEL buses and other large equipment. On August 26,1989 tank #744 failed its tightness test. It was excavated and removed on September 29, 1989, and excessed to the Lost River Highway Department, to be used for road culverts.

Although the tank failed its tightness test, laboratory analysis of soil samples taken from the tank bed showed the level of contamination beneath the tank to be below state TPH action limits, and below risk-based maximum allowable soil concentrations for the hazardous fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX).

Tank site COCA CFA-30 has been back-filled to grade. The area around the tank is clean, and a COCA CFA-30 sign has been correctly posted to mark the site as a solid waste management unit.

DECISION RECOMMENDATION

II. SUMMARY - QUALITATIVE ASSESSMENT OF RISK:

CFA-30 has low risk and high data reliability. This combination falls into the "no action required" portion of the decision graph.

III. SUMMARY - CONSEQUENCES OF ERROR:

Incorrectly declaring a contaminated site clean may result in the eventual migration of hazardous substances to the water table, from which they might eventually be ingested by humans who could suffer excess morbidity/mortality.

Incorrectly declaring a clean site contaminated could result in wasted funds.

IV. SUMMARY - OTHER DECISION DRIVERS

Laboratory analysis of soil samples taken from the tank bed shows TPH concentrations at CFA-30 are below both EPA and Tank Management Program action levels.

RECOMMENDED ACTION:

This site should be reclassified as a "no action" site. Laboratory analysis of soil samples taken from the tank bed shows contaminant levels to be below the action levels of both the state and Tank Management Program. The concentrations of hazardous constituents (BTEX) are below detection limits in all soil samples analyzed, and therefore orders of magnitude lower than the risk-based maximum allowable soil concentration. This comparison indicates that COCA site CFA-30 does not represent an unacceptable hazard, and should therefore be removed from the list of sites in need of remediation.

SIGNATURES	# PAGES:	DATE: 2/28/92
Prepared By: L. Shaw BJF		DOE WAG Manager:
Approved By:		Independent Review: Shannon Waters

DECISION STATEMENT
(BY DOE RPM)

DATE RECD: 1/6/93 CFA-30

DISPOSITION:

The 1000-gallon petroleum tank was removed, and soils were excavated to below levels of concern. No further action is recommended for CFA-30.

DATE: 1/6/93	**# PAGES (DECISION STATEMENT)**
NAME: Lisa Green for JKlyle	**SIGNATURE:** Lisa Green for

DECISION STATEMENT
(BY EPA RPM)

DATE RECD: 1/6/93 CFA-30

DISPOSITION:

Tank 744, a 1000 gal tank removed from service in 89 and excavated. 40 gal of waste oil pumped from the tank. Samples taken of soil. 20 gal of oil lost during tank Testing contaminated soil went to CFA landfill, waste oil was crankcase oils. TPH values are low Ethyl benzene for sample CFA 744-3 was 100 ppb which is under level of concern. Excavation tank filled with clean soil. No further action recommended based on initial assessment, summary assessment and Track I pkg.

DATE: 1/6/93	**# PAGES (DECISION STATEMENT)**
NAME: Wayne Penn	**SIGNATURE:** Wayne Penn

DECISION STATEMENT
(BY STATE RPM)

DATE RECD: 1/6/93 CFA-30

DISPOSITION:

Information available indicates that the tank contained motor oil from vehicle maintenance. Given that the tank and soil was removed there would be no unacceptable risk posed by this site. The data collected ~~for~~ (soil samples) from 10/11/89 are for TPH and BTEX and are of little value here since the ~~tank~~ tank reportedly contained waste motor oil.

The state decision is based ~~on the~~ fact that ~~tank~~ on the data concerned in of BTEX which showed indicate only minimal conc. of oil in soil.

No further action required.

DATE: 1/6/93	**# PAGES (DECISION STATEMENT)**
NAME: Dean J. Nygard	**SIGNATURE:** Dean J. Nygard

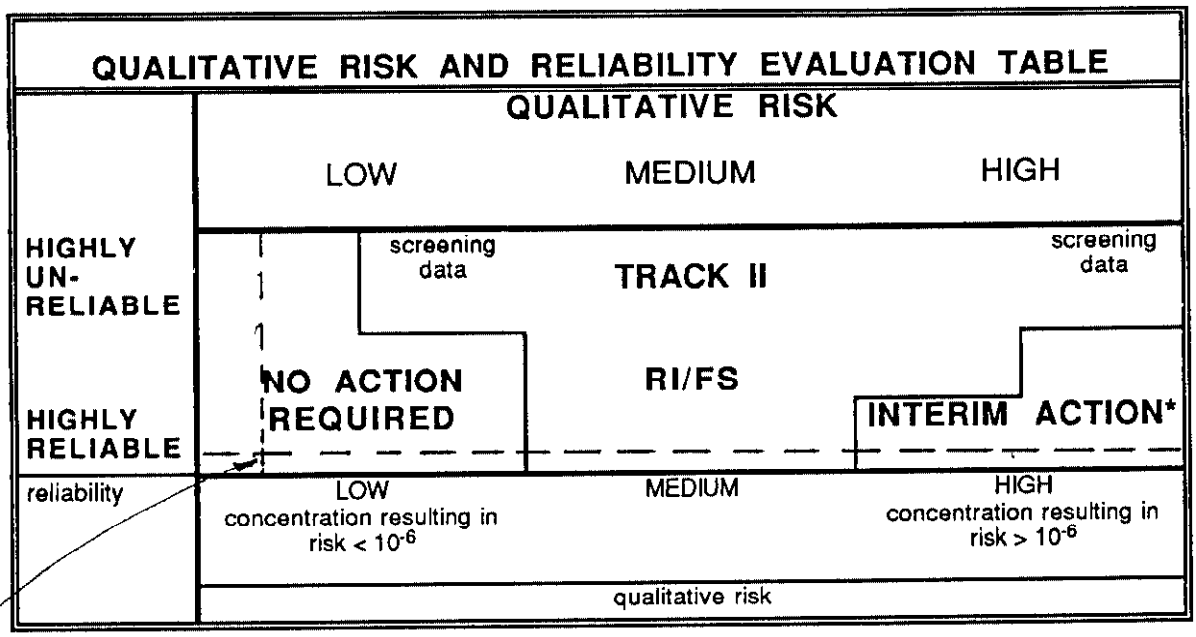
PROCESS/WASTE WORKSHEET
SITE ID CFA-30

col 1 Processes Associated with this site	col 2 Waste Description & Handling Procedures	col 3 Description & Location of any Artifact/Structures/Disposal Areas Associated with this Waste or Process
Process Underground storage tank	Waste oil from crank cases of buses and heavy equipment poured by hand down fill pipe	Artifact: 1000 gal storage tank Location: 10 ft NW of CFA-665, 50 in. underground Description: Tar-coated steel
		Artifact: Associated piping Location: Attached to tank #744 Description 4 in. fill pipe with 3 in. reducer, 3 in. fill pipe, 3 in. remote fill, vents
		Artifact Location Description
Process Leak testing of tank #744	Waste oil pumped out prior to testing Tank filled with diesel for leak testing	Artifact: 40 gal waste oil Location: Pumped into EG&G equipment operator truck, shipped offsite Description:
		Artifact: 1000 gal waste diesel Location: Pumped back into truck after testing, 20 gal released during test Description: Any fuel contaminated soil was taken to CFA landfill
		Artifact Location Description
Process Removal of tank #744	Fuel contaminated soil segregated/wind-rowed Storage tank removed from CFA-30 Piping removed from CFA-30	Artifact: Unrecorded quantity of fuel contaminated soil Location: Segregated and trucked to CFA landfill Description: "wind-rowed" until clean by photoionization detector readings
		Artifact: 1000 gal tar-coated steel storage tank Location: Excessed to Lost River Highway Dept. Description: Cut up and used for road culverts
		Artifact: Associated piping Location: Unknown Description: 4 in. fill-pipe with 3 in. reducer, 3 in. fill pipe, 3 in. remote fill, vents

CONTAMINANT WORKSHEET
SITE ID CFA-30
PROCESS (col 1) UST

Col 4 What known/potential hazardous substances/constituents are associated with this waste or process?	Col 5 Potential sources associated with this hazardous material?	Col 6 Known/estimated concentrations of hazardous substances/ constituents[a]	Col 7 Risk based concentration mg/kg	Col 8 Qualitative risk assessment (Hi/Med/Lo)	Col 9 Overall reliability (Hi/Med/Lo)
Benzene	Fuel-contaminated soil	ND DL = 0.05 mg/Kg	0.155 mg/Kg	Low	High
Toluene	Fuel-contaminated soil	ND DL = 0.05 mg/Kg	1,140 mg/Kg	Low	High
Ethylbenzene	Fuel-contaminated soil	ND DL = 0.05 mg/Kg	1,500 mg/Kg	Low	High
Xylenes	Fuel-contaminated soil	ND DL = 0.05 mg/Kg	25,400 mg/Kg	Low	High
Total Petroleum Hydrocarbons	Fuel-contaminated soil	3-76 mg/Kg	N/A	N/A	High

a. ND = not detected
DL = detection limit in ppm
N/A = not applicable. Risk value cannot be calculated because TPH is not a specific chemical and has no toxicity data.
BTEX determined by EPA method 8020, TPH by EPA method 8015



* if there exist sufficient data to identify an appropriate remedy

ALL COMPOUNDS

Question 1. What are the waste generation process locations and dates of operation associated with this site?

Block 1 Answer:

Site CFA-30 is the historical site of a 1000 gal tar-coated steel underground storage tank designated tank #744. This tank was installed roughly 10 ft NW of building CFA-665, buried approximately 50 inches below the soil surface. It was installed in 1960, used for bulk storage of waste oil through August of 1989, and excavated on September 29, 1989.

Block 2 *How reliable is/are the information source/s?* __High _X_Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

TMP Summary Assessment was written in 1991, whereas the work was performed in 1989, lowering reliability to medium.

Block 3 Has this INFORMATION been confirmed? _X_Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Tank location confirmed by ground penetrating radar map, excavation photographs, and tank tester's logbook. Tank contents confirmed by conversations with tank tester, and by entries in tank tester's log book.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[X]	(6)	D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	(5)	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[X]	(7)(9)(10)(11)			

Question 2. What are the disposal process locations and dates of operation associated with this site? How was the waste disposed?

Block 1 Answer:

On August 25, 1989, the 50 inches of soil above Tank # 744 were excavated and piled beside the excavation. Approximately 40 gal of waste oil were pumped from Tank #744 into an EG&G equipment operator truck. The volume of tank #744 was then determined by filling it with 1000 gal waste diesel fuel. During the Petro-Tite leak testing on August 26, Gene Fischer of Precision Tank Testing noted leakage around the manway on the tank top, and was unable to stabilize the fluid level in the stand pipe. The estimated loss during testing "exceeded 20 gallons" of waste diesel. Following the test, the waste diesel in Tank #744 was pumped into a waiting truck.

On September 29, 1989, the soil around Tank #744 was excavated, and the tank was placed on cinder blocks. As the excavating back-hoe brought soil up from the tank bed, samples were taken from its bucket, then the excavation was back-filled with its original clean soil, as well as clean soil from the CFA gravel pit. Any contaminated soil was segregated and taken to the CFA landfill. Tank #744 was loaded on a truck and excessed to the Lost River Highway Department for use as road culverts.

The exact locations of the sample points are unknown. Their depth was approximately nine feet. Martha Gitt, a sampler employed by the EG&G Environmental Technology Unit at the time, reports that it was standard practice to take one sample from below the tank's keel line, and the others from the four walls of the excavation, or from areas where soil staining was evident.

Block 2 How reliable is/are the information source/s? _High X Med _Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Reports of the ETU sampling personnel and of the job site supervisor differ on whether contaminated soil was encountered. All sources agree, however, that any contaminated soil would have been taken to the CFA landfill for land farming.

Block 3 Has this INFORMATION been confirmed? X Yes _No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Tank leakage during testing confirmed by conversation with tank tester, letter from Petro-Tite leak testing, and by tank tester's logbook. Final disposition of tank confirmed by summary assessment, job site supervisor's memo, conversation with job site supervisor.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	(5)	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[X]	(3) (4) (8) (9) (10) (12)			

Question 3. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Block 1 Answer:

Although Precision Tank Testing noted leakage around the tank's manway, and lost over 20 gal of waste diesel during the Petro-Tite leak testing, laboratory analysis of samples taken from the tank bed shows TPH at only 3-76 mg/Kg (state regulatory action level is 1000 mg/Kg). BTEX was below the detection limit of 0.05 mg/Kg for all samples tested. The samples were taken from the back-hoe bucket as it brought up soil from the tank bed at a depth of approximately 9 ft.

If the primary source of leakage was the manway noted by tank tester Gene Fischer, then it is possible that product only escaped tank #744 when it was overfilled for leak testing. If, during its active life, the tank was pumped out before the fluid level reached the manway, then little or no leakage may have occurred.This would account for the low TPH and BTEX values of soil taken from the tank bed.

Based on laboratory analysis of soil samples taken from the tank bed there is no evidence of contamination above regulatory levels, nor of migration.

Block 2 How reliable is/are the information source/s? _X_High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information based on highly reliable analytical laboratory results.

Block 3 Has this INFORMATION been confirmed? _X_Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Manway leakage noted in tank tester's data chart confirmed by telephone conversation with the tank tester. Manway's location on the tank's top confirmed by excavation photographs.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	(5)	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[X]	(9) (10)			

Question 4. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Block 1 Answer:

Laboratory analysis of soil samples taken from the tank bed supports the conclusion that there is not a source at this site. TPH values were 3-76 mg/Kg (state regulatory action level is 1000 mg/Kg). BTEX concentrations were below detection limit of 0.05 mg/Kg in all samples tested.

Block 2 How reliable is/are the information source/s? _X_High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information is based on analytical laboratory results.

Block 3 Has this INFORMATION been confirmed? __Yes _X_No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Data Chem results have not been formally validated.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 5. Does the site operating or disposal historical information allow estimation of the pattern of potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?

Block 1 Answer:

If waste oil leaked through a hole in the tank body, then one would expect a plume centered on the hole. If the tank leaked around the 22 inch manway on its upper side, then one would expect a plume centered on the manway, provided that the tank was filled above the level of the manway during its active life.

Laboratory analysis of soil samples taken from the tank bed, however, supports the conclusion that this site is not contaminated. TPH values ranged from 3-76 mg/Kg (state regulatory action level is 1000 mg/Kg). BTEX values were below the detection limit of 0.05 mg/Kg in all samples tested.

Block 2 How reliable is/are the information source/s? X High _Med _Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information based on analytical laboratory results

Block 3 Has this INFORMATION been confirmed? _Yes X No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Block 1 Answer:

The volume formerly occupied by tank #744 has been back-filled with clean soil. Laboratory analysis of soil samples taken from the tank bed showed TPH values of 3-76 mg/Kg (state regulatory action level is 1000 mg/Kg). BTEX values were below detection limits of 0.05 mg/Kg in all samples tested, indicating that there is not a contaminated region at site CFA-30.

The risk-based maximum allowable concentration was calculated by assuming a contaminated region of approximately the same dimensions as the tank (4 m x 1.5 m x 1.5 m).

A reasonable upper bound for the maximum volume of soil which tank #744 could have contaminated is 65 yd^3, which is approximately the volume of soil into which one tank volume would expand (Rood, 1991).

Block 2 How reliable is/are the information source/s? _X_High _X_Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information based on highly reliable analytical laboratory results. Upper bound based on simple mathematical model of medium reliability.

Block 3 Has this INFORMATION been confirmed? __Yes _X_No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Data Chem results have not been formally validated.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	(5)	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[X]	(13)			

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Block 1 Answer:

Laboratory analysis of soil samples taken from the tank bed supports the conclusion that there are not significant quantities of hazardous substances at this site. TPH values were 3-76 mg/Kg (state regulatory action level is 1000 mg/Kg). BTEX values were below the detection limit of 0.05 mg/Kg in all soil samples tested. Therefore it is estimated that the quantity of hazardous substances at CFA-30 is near zero.

Block 2 How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information based on analytical laboratory results.

Block 3 Has this INFORMATION been confirmed? __Yes X No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Data Chem results have not been formally validated.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

Question 8. Is there evidence that this hazardous substance/constituent is present at the source as it exists today? If so, describe the evidence.

Block 1 Answer:

Laboratory analysis of soil samples taken from the tank bed supports the conclusion that no source exists at site CFA-30. TPH values were 3-76 mg/Kg, (state regulatory action level is 1000 mg/Kg). BTEX values were below detection limit of 0.05 mg/Kg for all samples tested.

Block 2 How reliable is/are the information source/s? _X_High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information based on analytical laboratory results.

Block 3 Has this INFORMATION been confirmed? __Yes _X_No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Data Chem results have not been formally validated.

Block 4 **Sources of Information:** (check appropriate box(es) and write in source)

No available information	[ ]		Analytical data	[X]	(1) (2)
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		Q.A. data	[ ]	
Aerial photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

REFERENCES

(1) Data Chem. Environmental Soil Report (TPH for CFA-30). October 1989.

(2) Data Chem. Environmental Soil Report (BTEX for CFA-30).April 1991.

(3) EG&G ID. Tank Management Program Removal Procedures for UST, Tank Number CFA-744.

(4) EG&G ID. INEL Underground Storage Tank Disposal for 1989 and 1990. Interoffice correspondence CLN-08-90.

(5) EG&G ID. CFA-30 Summary Assessment. April, 1991.

(6) EG&G ID. Ground Penetrating Radar Survey Map for Tank CF-744. Reference Drawing 423324.

(7) EG&G ID. Photographs of CFA-30 excavation.

(8) Fischer, Gene. Letter to Keith Jones. August 29, 1989.

(9) Fischer, Gene. Data Chart for Tank System Tightness. August 25 and 26, 1989.

(10) Fischer, Gene. Manager of Precision Tank Testing. Personal Communication, October 30, 1991.

(11) Gitt, Martha. Formerly at EG&G ID Environmental Technology Unit. Personal Communication, October 31, 1991.

(12) Nash, Connie. Job Site Supervisor for CFA-30 testing and removal. Personal Communication, October 31, 1991.

(13) Rood, A. S. Estimation of Volume of Contaminated Soil from a Fuel Oil Spill. August, 1991.

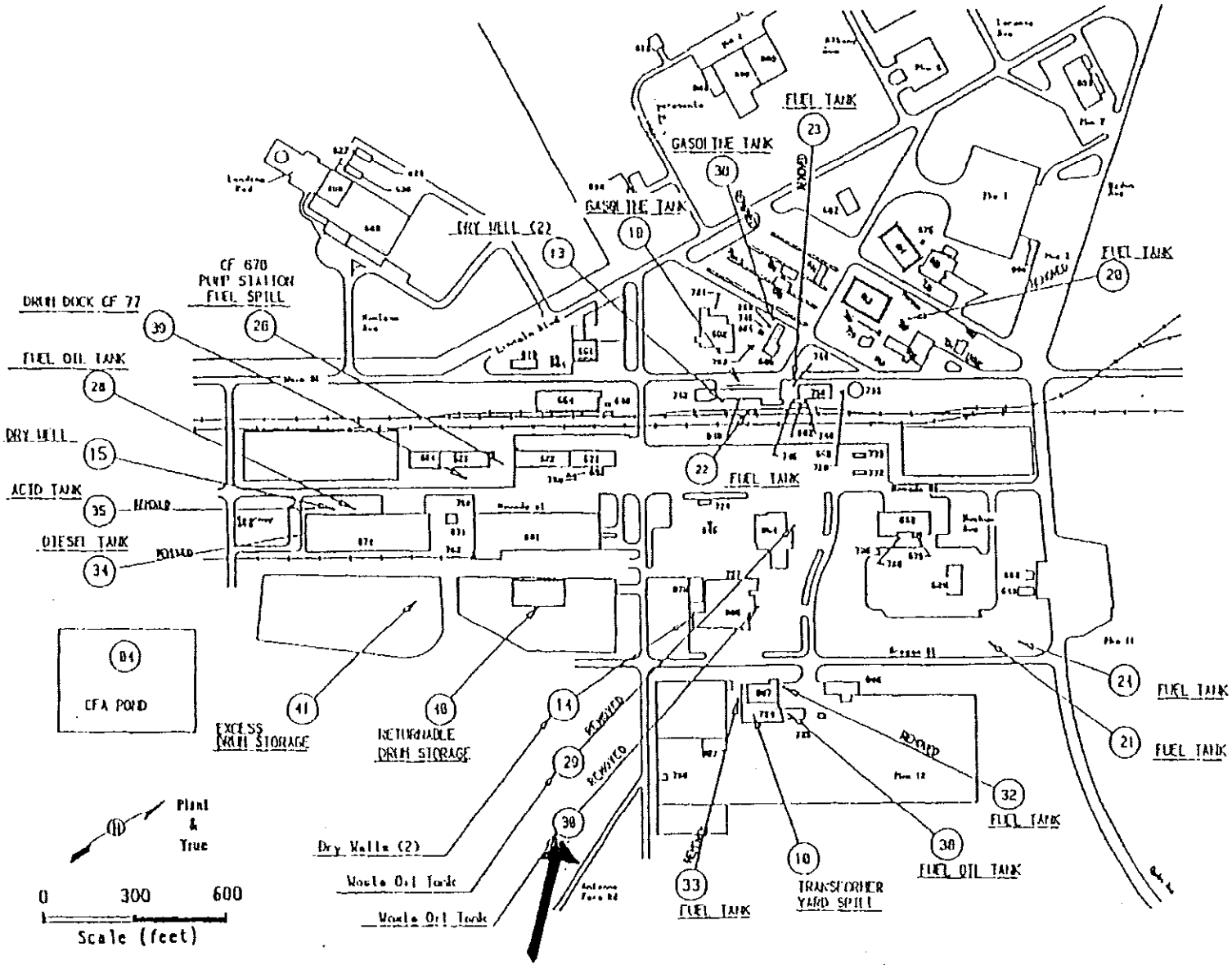
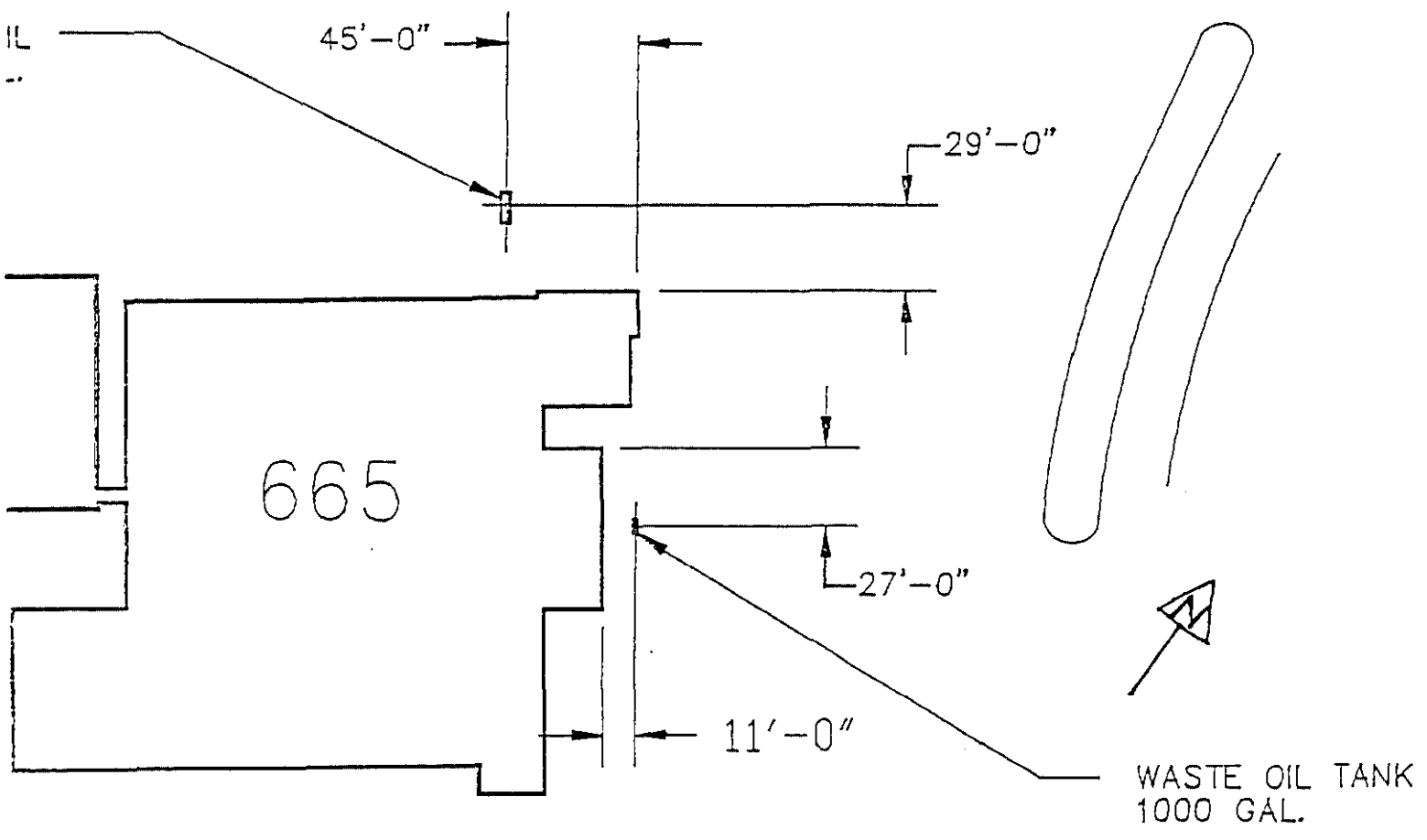


Figure 1. Map of the south portion of CFA showing COCA Unit 30 (Tank 744), other COCA units, and CFA buildings.

UNDERGROUND STORAGE TANK LOCATION
TANK CF-744

LOCATION DESCRIPTION:
See detail map below

REF. DWG. : 423324



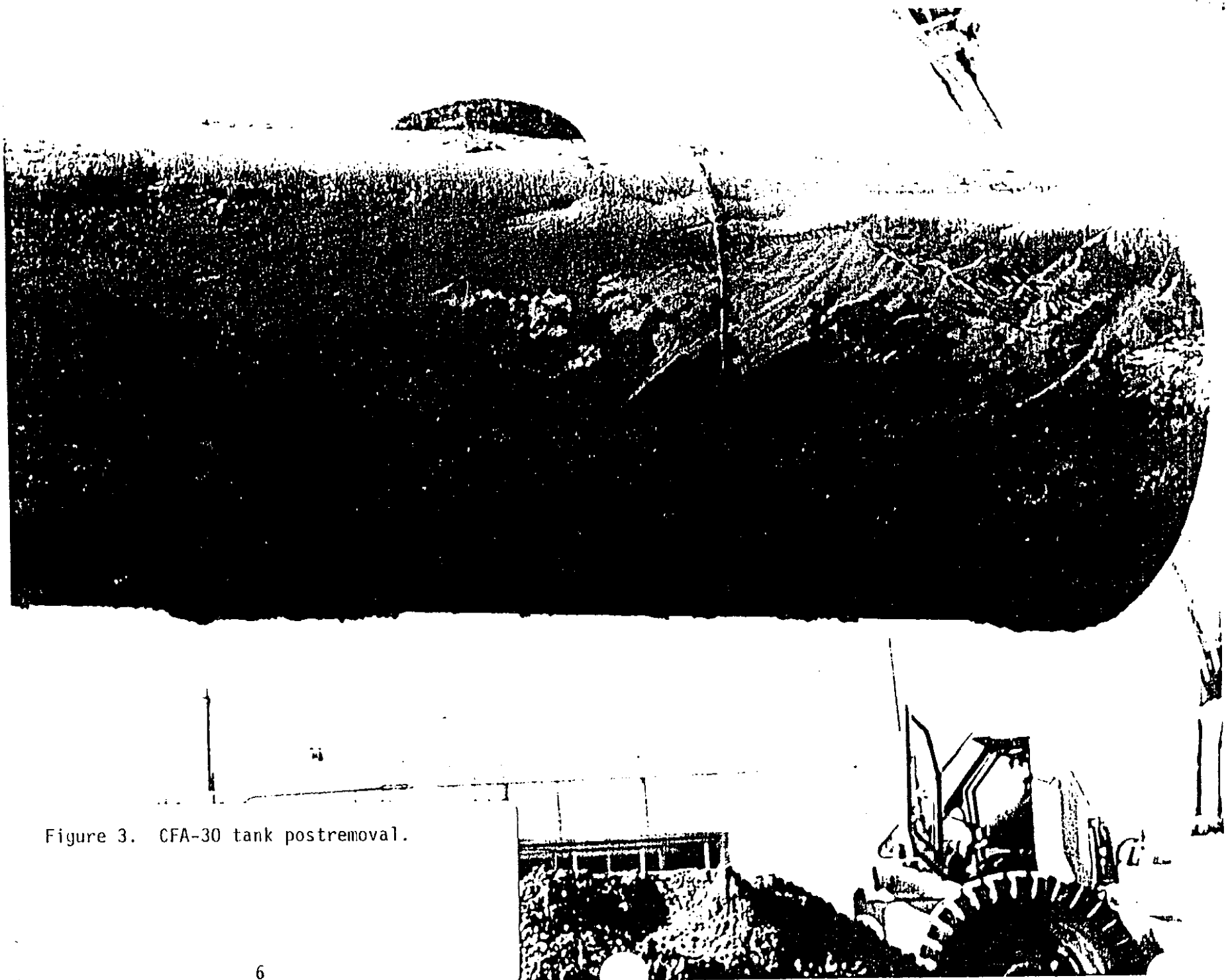


Figure 3. CFA-30 tank postremoval.

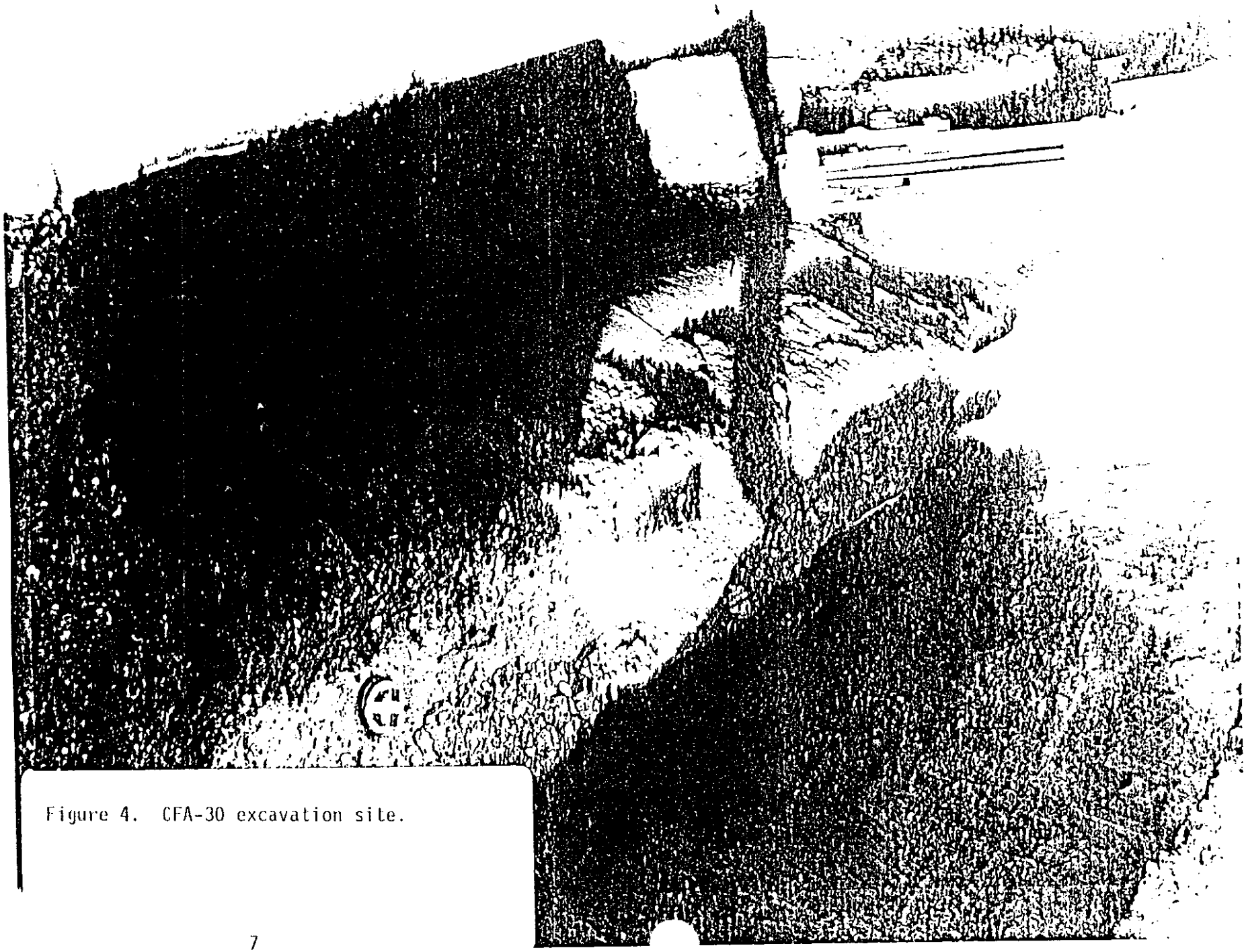


Figure 4. CFA-30 excavation site.

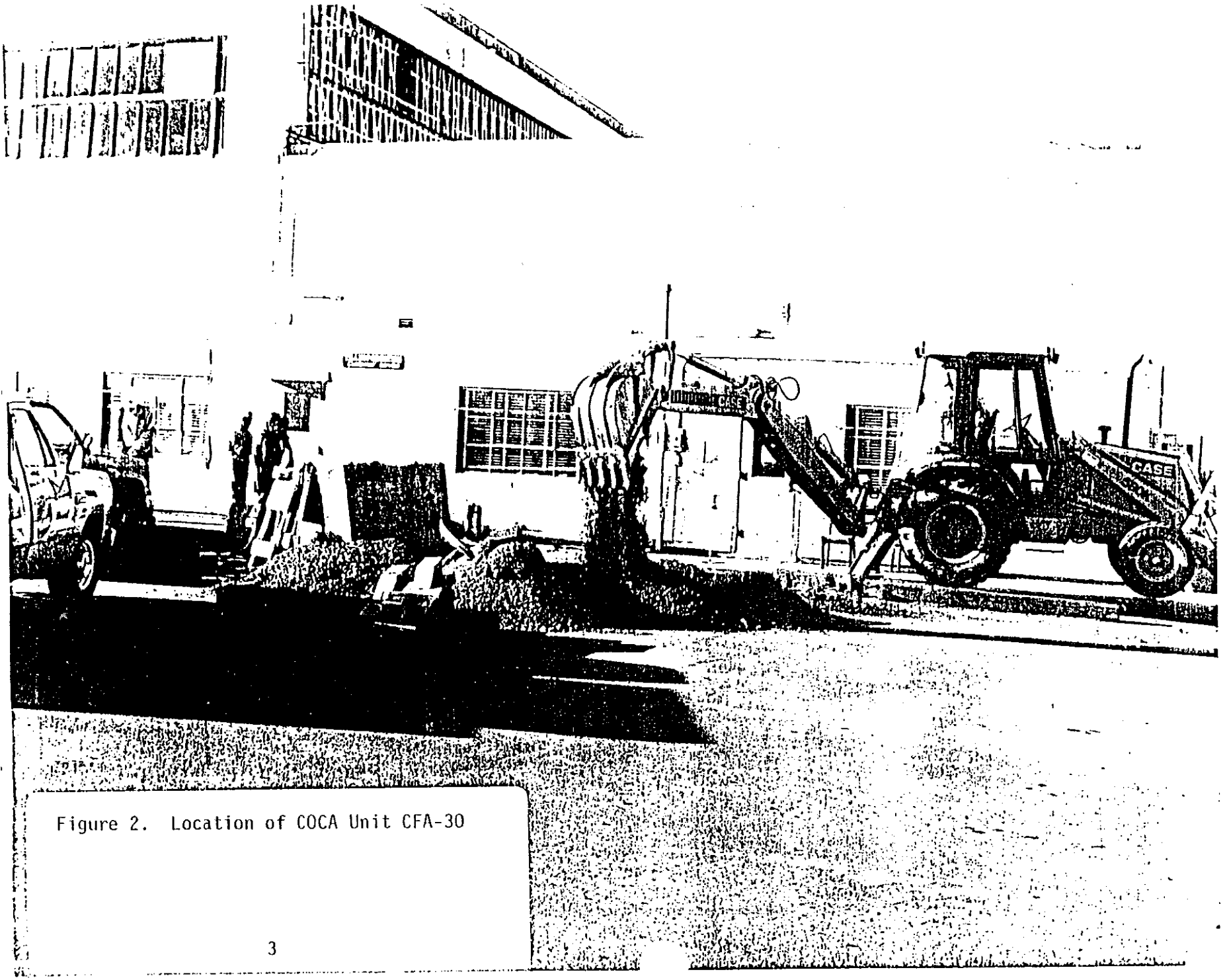


Figure 2. Location of COCA Unit CFA-30

CFA-30 ESTIMATED SPILL VOLUME: 1000 gal

= 1 TANK VOLUME

= 22.72 BARRELS (1 BARREL = 44 GAL)

$$V_S = \frac{0.2 \times V_{HC}}{P \times (RS)}$$

ESTIMATED SPILL

$$V_S = \frac{0.2 \times 22.72 \text{ barrels}}{0.35 \times 0.20}$$

0.35 — CONSTANT FOR SITE SOILS

0.20 — RS FOR LUBE OIL

$$V_S = 64.94 \text{ yd}^3 \cong \boxed{65 \text{ yd}^3}$$

CONSERVATIVE UPPER BOUND FOR VOLUME OF SOIL WHICH TANK # 744 COULD HAVE ~~SATURATED~~ CONTAMINATED.

TRACK-1 RISK EVALUATION SUMMARY

DATE: 11/14/91

SITE: CFA-29 AND CFA-30

SUMMARY:

A track 1 assessment was conducted to establish risk-based soil screening concentrations to evaluate potential hazardous contaminants at CFA-29 and CFA-30. The dimensions of the contaminated area for both sites were 1.5 m wide and 4 m long, with an average depth of 1.5 m. The calculation of soil screening concentrations was based on a target risk level representing a hazard quotient of 1 (based on noncarcinogenic effects) or a cancer risk of 1.0E-06 (based on carcinogenic effects). Four potential contaminants were evaluated: benzene, ethylbenzene, toluene, and xylenes. Benzene is classified by the EPA as a Group A human carcinogen (sufficient evidence of carcinogenicity in humans). The other contaminants are not classifiable as to human carcinogenicity.

Summary tables of risk-based soil screening concentrations for each evaluated contaminant are attached. Four potential exposure pathways were considered, as applicable to the contaminant: soil ingestion, inhalation of fugitive dust, inhalation of volatiles, and groundwater ingestion. Soil screening levels were calculated for both occupational and residential scenarios, as applicable to the receptor scenario. The shaded box in the attached tables shows the lowest risk-based soil concentration for the contaminant. The ingestion of groundwater pathway provided the most significant risk (lowest risk-based screening soil concentration) for all evaluated contaminants.

SUMMARY TABLE OF RISK-BASED SOIL SCREENING CONCENTRATIONS FOR
CFA-29 AND CFA-30 SOIL CONTAMINATION FOR BENZENE

Exposure	Scenarios			
	Occupational		Residential	
Pathways	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)
Soil Ingestion	1.97E+02	--	2.21E+01	--
Inhalation of Fugitive Dust	4.22E+05	--	2.56E+05	--
Inhalation of Volatiles	5.26E+02	--	3.49E+02	--
Groundwater Ingestion	NA	NA	1.55E-01	--

NA = Not Applicable.
-- = Calculation not performed because of no published toxicity value.
Shaded box = Lowest risk-based soil concentration.

SUMMARY TABLE OF RISK-BASED SOIL SCREENING CONCENTRATIONS FOR
CFA-29 AND CFA-30 SOIL CONTAMINATION FOR ETHYLBENZENE

Exposure	Scenarios			
	Occupational		Residential	
Pathways	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)
Soil Ingestion	--	2.00E+05	--	2.70E+04
Inhalation of Fugitive Dust	--	1.29E+09	--	9.39E+08
Inhalation of Volatiles	--	6.63E+06	--	5.28E+06
Groundwater Ingestion	NA	NA	--	1.50E+03

NA = Not Applicable.
-- = Calculation not performed because of no published toxicity value.
Shaded box = Lowest risk-based soil concentration.

SUMMARY TABLE OF RISK-BASED SOIL SCREENING CONCENTRATIONS FOR
CFA-29 AND CFA-30 SOIL CONTAMINATION FOR TOLUENE

Exposure	Scenarios			
	Occupational		Residential	
Pathways	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)
Soil Ingestion	--	4.00E+05	--	5.40E+04
Inhalation of Fugitive Dust	--	2.54E+09	--	1.85E+09
Inhalation of Volatiles	--	6.98E+06	--	5.55E+06
Groundwater Ingestion	NA	NA	--	1.14E+03

NA = Not Applicable.
-- = Calculation not performed because of no published toxicity value.
Shaded box = Lowest risk-based soil concentration.

SUMMARY TABLE OF RISK-BASED SOIL SCREENING CONCENTRATIONS FOR
CFA-29 AND CFA-30 SOIL CONTAMINATION FOR XYLENES

Exposure	Scenarios			
	Occupational		Residential	
Pathways	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)	Soil Concentration at 1E-06 Risk (mg/kg)	Soil Concentration at HQ = 1 (mg/kg)
Soil Ingestion	--	4.00E+06	--	5.40E+05
Inhalation of Fugitive Dust	--	3.84E+08	--	2.78E+08
Inhalation of Volatiles	--	1.65E+06	--	1.32E+06
Groundwater Ingestion	NA	NA	--	2.54E+04

NA = Not Applicable.
-- = Calculation not performed because of no published toxicity value.
Shaded box = Lowest risk-based soil concentration.

Document/Calculation/Name or identification CALCULATION OF THE VOLUME OF SOIL CONTAMINATED BY A FUEL SPILL OF KNOWN VOLUME (FOR CEA-30) (AND FOR CEA-29)

Prepared By JAMES BIGGS

Reviewed By:

Date	Name	Comment*
Dec 3, 1991	Wayne Downs	Calculations OK.
Dec 3, 1991	Wayne Downs	

Technical Leader

Approved By M. A. Kreckt — Unit Manager

12/3/91 — Date

*e.g. identify numbers or specific calculations if only portions were reviewed.

ESTIMATION OF VOLUME OF CONTAMINATED SOIL FROM A FUEL OIL SPILL

A. S. ROOD

AUGUST 7, 1991

PROBLEM: What is the volume of contaminated soil which would result from a surface fuel oil spill of a known or estimated quantity?

ASSUMPTIONS:

- N GALLON FUEL SPILL
- SOIL POROSITY = 0.35 (ρ) (Case et al., pg A-62)
- THE RESIDUAL SATURATION CAPACITY (RS) = { 0.10, 0.15, 0.20 }

The residual saturation for fuel oils is approximately 33% of the water holding capacity of the soil. Dragun (1988) reports maximum RS values for different fuel oils.

Table 1. Residual Saturation (RS) values for different fuels.

Fuel	RS
light oil and gasoline	0.10
diesel and light fuel oil	0.15
lube and heavy fuel oil	0.20

The volume of soil in cubic yards contaminated by a spill is given by (Dragun, 1988)

$$V_s = \frac{0.2 \times V_{BC}}{\rho \times (RS)} \qquad (1)$$

where V_s = Volume of contaminated soil at residual saturation (yd^3).

V_{BC} = volume of discharged hydrocarbons in barrels

= (N gallons of spilled fuel) x (1 barrel per 44 gallons)

ρ = soil porosity

RS = residual saturation from Table 1

The estimated volume in cubic yards contaminated by a light oil or gasoline spill is given by:

$$V_s = \frac{0.2 \times N/44}{0.35 \times 0.10}$$

The estimated volume in cubic yards contaminated by a diesel or light fuel oil spill is given by:

$$V_s = \frac{0.2 \times N/44}{0.35 \times 0.15}$$

The estimated volume in cubic yards contaminated by a lube or heavy fuel oil spill is given by:

$$V_s = \frac{0.2 \times N/44}{0.35 \times 0.20}$$

Calculate a volume:

N = _____ gallons

RS = _____ (from Table 1)

Therefore:

$$V_s = \frac{0.2 \times \_\_\_\_\_ / 44}{0.35 \times \_\_\_\_\_} = \_\_\_\_\_ \text{ cubic yards of contaminated soil}$$

References:

Case, M. J., Maheras, S. J. et al., Radioactive Waste Management Comolex Performance Assessment. EG&G Idaho Informal Report, EGG-WM-8773, June, 1990, Page A-62

Dragun, James, Soil Chemistry of Hazardous Materials. Hazardous Materials Control Research Institute, Chapter 2, 1988.

DATA CHEM LABORATORIES

ENVIRONMENTAL SOIL REPORT

Date 4/10/91
Agency Identification Number S89-0666-AB
Account No. 03018

EG&G Idaho - INEL
P.O. Box 1625
Idaho Falls, ID 83415-2109
Attention: Charles W. Ariss

Telephone (208) 526-9055

Sampling Collection and Shipment

Sampling Site ______________ Date of Collection September 29, 1989

Date Samples Received at DataChem October 03, 1989

Analytical Results

rameter Name alysis Date (Units) ethod Prep Method	Field Number Lab Number	CFA-743-1 EI 2981	CFA-743-2 EI 2982	CFA-743-3 EI 2983	CFA-744-1 EI 2984	CFA-744-2 EI 2985	CFA-744-3 EI 2986	MS EI 2987	
enzene 0/05/1989 020	μg/g	ND*	ND*	ND*	ND*	ND*	ND*	.90	
thyl Benzene 0/05/1989 020	μg/g	ND*	ND*	ND*	ND*	ND*	.10	.90	
oluene 0/05/1989 020	μg/g	ND*	ND*	ND*	ND*	ND*	ND*	.90	
ylene 0/05/1989 020	μg/g	ND*	ND*	ND*	ND*	ND*	ND*	2.0	

!! See comment on last page.
ND Parameter not detected.
NR Parameter not requested.
* Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

Analyst: James R. Baxter

Report regenerated from archives.
Reviewer:

Rand Potter
Laboratory Supervisor:

DATA CHEM LABORATORIES

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Sampling Collection and Shipment

Sampling Site _____ Date of Collection September 29, 1989

Date Samples Received at DataChem October 03, 1989

Analytical Results

[illegible]		MSD EI 2986							
[illegible] Benzene /05/1989 20	µg/g	.90							
[illegible]yl Benzene /05/1989 20	µg/g	.90							
[illegible]uene /05/1989 20	µg/g	.90							
[illegible]lene /05/1989 20	µg/g	2.0							

See comment on last page.
D Parameter not detected.
n Parameter not requested.
Analyses completed on or before this date.

** Parameter not analyzed (See comment page).
( ) Parameter between LOD and LOQ.
[ ] Method Reference (See comments page.)

DATA CHEM LABORATORIES

ENVIRONMENTAL SOIL REPORT

Date _____

Agency Identification Number S89-0666-AB

General Set Comments

Samples EI2987 and EI2988 are matrix spikes of sample EI2981 to which 1.ug/g of benzene, ethylbenzene, and toluene and 2.ug/g of xylene have been added.